DEPARTMENT OF ECOLOGY
State of Washington

Addendum to Quality Assurance Project Plan

Springwood Geotechnical Exploration Plan Phase II

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Quality Assurance Project Plan

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Agreement No. WRYBIP-2527-KittRD-00089
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June 2026

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Note: The numbered headings in this document correspond to the headings in the original QAPP. Only relevant sections are included here; therefore, some numbered headings may be missing.

4.2 Project Objectives

Table 2. Summary of proposed borings for 2026 Geotechnical Field Exploration Plan (Phase II)

Boring	Description	Angle	Boring Depth (feet)	In Situ Tests	Installs
J-B01-26	Secondary		360	Televiewer	2 VWPs
J-B01P-26*	Secondary		80	Falling Head Permeability	1 OSP / 1 VWP
J-B02-26	Secondary	~~Up to 20 Degrees~~	385	Televiewer & Packer Tests	2 VWPs
J-B04-26	Secondary	-	390	Televiewer & Packer Tests	2 VWPs
J-B04P-26*	Secondary	-	100	Falling Head Permeability	1 OSP / 1 VWP
J-B08-26	Primary	Up to 20 Degrees	405	Televiewer & Packer Tests	2 VWPs
J-B08P-26*	Primary		100	Falling Head Permeability	1 OSP / 1 VWP
J-B09-26	Primary	-	475	Televiewer & Packer Tests	2 VWPs
J-B10P-26*	Primary		80	Falling Head Permeability	1 OSP / 1 VWP
J-B11-26	Primary	~~Up to 20 Degrees~~	480	Televiewer & Packer Tests	2 VWPs
J-B11P-26*	Primary		100	Falling Head Permeability	1 OSP / 1 VWP
J-B12-26	Primary		465	Packer Tests	2 VWPs
J-B13-26	Saddle	-	475	Televiewer & Packer Tests	2 VWPs
J-B14-26	Saddle	-	260	Televiewer & Packer Tests	2 VWPs
J-B14P-26*	Saddle		100	Falling Head Permeability	1 OSP / 1 VWP
J-B15-26	Saddle	-	230		2 VWPs
J-B16-26	Saddle	-	210		2 VWPs
J-B17-26	Saddle	-	175	Televiewer & Packer Tests	2 VWPs
J-B17P-26*	Saddle		100	Falling Head Permeability	1 OSP / 1 VWP
J-B18-26	Saddle	-	210		2 VWPs
J-B19-26	Saddle	-	200	Televiewer & Packer Tests	2 VWPs

Boring	Description	Angle	Boring Depth (feet)	In Situ Tests	Installs
J-B20-26	Saddle	-	240	Televiewer & Packer Tests	2 VWPs
J-B20P-26*	Saddle	-	100	Falling Head Permeability	1 OSP / 1 VWP
J-B21-26	Outlet Works	-	320	Televiewer & Packer Tests	2 VWPs
J-B22-26	Outlet Works	-	320	Televiewer & Packer Tests	2 VWPs
J-B23-26	Outlet Works	-	250	Televiewer & Packer Tests	2 VWPs
~~J-B23P-25*~~	~~Outlet Works~~	~~-~~	~~100~~	~~Falling Head Permeability~~	~~1 OSP / 1 VWP~~
J-B24-25	Outlet Works	-	100	Televiewer & Packer Tests	2 VWPs
J-B24P-25*	Outlet Works	-	100	Falling Head Permeability	1 OSP / 1 VWP
J-B25-26	Borrow Area	-	200		
J-B26-26	Borrow Area	-	155		
J-B27-26	Borrow Area		160		
J-B28-26	Borrow Area	-	165		
J-B30-26	Borrow Area	-	150		
J-B32-26	Borrow Area	-	310		
J-B33-26	Borrow Area	-	280		
J-B34-26	Borrow Area	-	260		
J-B35-26	Borrow Area	-	220		
J-B36-26	Borrow Area	-	220		

* The OSP wells are designated with adding letter “P” at the end of original boring label. The OSP wells will be advanced close to the original boring to facilitate in situ testing and installation of open standpipe piezometers.

Borings along the outlet works were moved to align with the revised project layout, with depths adjusted as needed. Additional borrow borings were also added to fill gaps identified in the exploration program and improve site characterization.

8.2 Measurement and sampling procedures

While drilling in cohesive materials, sampling shall be performed in accordance with ASTM D1587 (*Standard Practice for Thin-Walled Tube Sampling of Soils for Geotechnical Purposes*) (2015). If cohesionless soils are encountered, SPT shall be performed in accordance with ASTM D1586 (*Standard Test Method for Penetration Test (SPT) and Split-Barrel Sampling of Soils*) (2018a). If rock is encountered, sampling shall be performed in accordance with ASTM D2113-14 (*Standard Practice for Rock Core Drilling and Sampling of Rock for Site Investigation*) (2014).

Where cohesionless soils are encountered, SPTs will be performed. Samples shall be obtained at 5 or 10-foot intervals, or when a significant change in materials is observed during drilling, with a standard 2-inch outer diameter split-barrel drive sampler driven 18 inches per test. The sampler will be driven by a 140-pound automatic hammer with a 30-inch drop. The sampler will be driven 18 inches (or until refusal) with blow counts for each 6-inch increment noted on the boring logs. Refusal will be defined as 10 blows with no advancement, 50 blows for less than 6 inches of advancement, and 100 blows for 6 to 18 inches of advancement. SPT samples will be placed in Ziploc baggies or sealable jars and contain the project information, boring name, sample number, and depth.

Undisturbed (intact) sampling of cohesive soil will be obtained by using a 30-inch long by 3-inch outer diameter thin-walled Shelby tube sampler. Shelby tubes will be lowered to the bottom of the borehole by the drill rod and hydraulically pushed (continuously) 24 inches, or a portion thereof if refusal, into undisturbed soil. The subcontractor will be equipped to measure downward pressure applied to the drill string as the Jacobs representative will note push pressure on the soil boring log.

Potential very stiff to hard clays may be present in the soil profile; therefore, for sample intervals where less than 6 inches of recovery is encountered, the sample interval should be drilled and cleaned to the bottom of the push interval, and then an SPT will be taken. The rock core samples shall be logged, marked, preserved, and placed into rock core boxes in accordance with ASTM D2113-14.

Bulk samples from test pits shall be collected in double layers of sealable plastic bags (bag samples) and 5-gallon buckets with lids (bulk sample). Samples in the Ziploc baggies will be used to obtain in situ moisture. The remaining sample will be used for determining the physical properties of soil.

The OSP wells will be installed according to Ecology's regulations as outlined in the chapter 173-160 WAC (Minimum Standards for Construction and Maintenance of Wells), WAC 173-160-151, and WAC 173-160-400.

***Where there are high concentrations of boulders and cobbles encountered within the overburden soils, that demonstrate significant sonic drilling challenges (e.g., casing failures, the need for overdrilling, etc.), the transition from sonic drilling to HQ coring can occur at the depth where rock-like drilling conditions are encountered, rather than at the interpreted bedrock surface.

Advancement using HQ coring in the overburden soils has demonstrated that adequate soil classification and characterization of the overburden materials can still be effectively achieved. However, Standard Penetration Tests (SPTs) cannot be performed once the drilling method transitions to HQ coring.***